AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (Currently amended): A printing inspection apparatus for inspecting a printing state of cream solder printed through pattern holes on a substrate after screen printing, said apparatus comprising:

image pick-up means for picking up an image of said substrate;

printing judging means for making a go/no-go judgment of the printing state based on an image pick-up result of said substrate from said image pick-up means and inspection data needed to perform a printing inspection;

display means for displaying a judgment result; and

grouping means for classifying and grouping solder element shape and position data corresponding to a plurality of the pattern holes into at least one data group which is grouped according to a grouping condition apart from other data group, wherein the grouped data is identified by the grouping condition,

wherein said display means displays the judgment result in connection with the data groups, and

wherein said grouping means comprises grouping condition choosing means for choosing the grouping condition and a grouping frame for enclosing images of only the pattern holes corresponding to the chosen grouping condition.

Claim 2 (Original): The printing inspection apparatus according to Claim 1, wherein:

the grouping condition is determined based on a geometrical range on a printing surface of said substrate; and

said printing judging means makes a judgment of the printing state using a data group grouped as an inspection performance range.

Claim 3 (Original): The printing inspection apparatus according to Claim 1, wherein:

the grouping condition is determined based on an attribute of said electronic components; and

said printing judging means makes a judgment of the printing state using a data group grouped as an electronic component having an attribute specified as a subject to be inspected.

Claim 4 (Original): The printing inspection apparatus according to Claim 1, wherein:

the grouping condition is determined so as to make a one-to-one correspondence between said electronic components and the data groups; and

said display means displays the judgment result for each data group.

Claim 5 (Currently amended): A printing inspection method for inspecting a printing state of cream solder printed through pattern holes on a substrate after screen printing by using a printing inspection apparatus, said method comprising the steps of:

making a go/no-go judgment of the printing state based on inspection data generated by grouping unit shape and position data corresponding to a plurality of the pattern holes into at least one data group which is grouped according to a grouping condition apart from other data group, wherein the grouped data is identified by the grouping condition, and an image pick-up result of said substrate from image pick-up means; and

displaying a judgment result in connection with the data groups,

wherein said method further comprises the steps of choosing the grouping condition and enclosing images of only the pattern holes corresponding to the chosen grouping condition.

Claim 6 (Original): The printing inspection method according to Claim 5, wherein:

the grouping condition is determined based on a geometrical range on a printing surface of said substrate; and

a judgment of the printing state is made by using a data group grouped as an inspection performance range.

Claim 7 (Original): The printing inspection method according to Claim 5, wherein:

the grouping condition is determined based on an attribute of said electronic components; and

a judgment of the printing state is made by using a data group grouped as an electronic component having an attribute specified as a subject to be inspected.

Claim 8 (Original): The printing inspection method according to Claim 5, wherein:

the grouping condition is determined so as to make a one-to-one correspondence between said electronic components and the data groups; and

the judgment result is displayed for each data group.

Claim 9 (Currently amended): A printing inspection data generating apparatus for generating inspection data used in a printing inspection apparatus for inspecting a printing state of cream solder printed through pattern holes on a substrate after screen printing and containing shape and position data indicating shapes and positions of solder print portions formed by printing the cream solder on a printing surface, said printing inspection data generating apparatus comprising:

data providing means for providing element shape and position data indicating shapes and positions of element solder print portions formed on respective electrodes provided on a circuit forming surface of said substrate to be used to bond electronic components; and

grouping means for classifying and grouping the element shape and position data into data groups which is grouped according to a grouping condition to identify at least one data

group according to the grouping condition apart from other data group than the data group grouped,

wherein said grouping means comprises grouping condition choosing means for choosing the grouping condition and a grouping frame for enclosing images of only the pattern holes corresponding to the chosen grouping condition.

Claim 10 (Original): The printing inspection data generating apparatus according to Claim 9, wherein:

the grouping condition is determined based on a geometrical range on the printing surface of said substrate.

Claim 11 (Original): The printing inspection data generating apparatus according to Claim 9, wherein:

the grouping condition is determined based on an attribute of said electronic components.

Claim 12 (Original): The printing inspection data generating apparatus according to Claim 9, wherein:

the grouping condition is determined so as to make one group for each of said electronic components.

Claim 13 (Original): The printing inspection data generating apparatus according to Claim 9, further comprising specific inspection data giving means for giving specific inspection data to the individual data groups.

Claim 14 (Original): The printing inspection data generating apparatus according to any of Claims 9 through 13, wherein:

said data providing means provides element shape and position data obtained based on mask opening data detected from a mask plate to be used for the screen printing.

Claim 15 (Currently amended): A printing inspection data generating method for generating inspection data used in a printing inspection apparatus for inspecting a printing state of cream solder printed through pattern holes on a substrate after screen printing and containing shape and position data indicating shapes and positions of solder print portions formed by printing the cream solder on a printing surface, wherein:

element shape and position data corresponding to a plurality of the pattern holes is grouped into at least one data group which is grouped according to a grouping condition apart

from other data group, wherein the grouped data is identified by the grouping condition,

wherein said method comprises the steps of choosing the grouping condition and enclosing images of only the pattern holes corresponding to the chosen grouping condition.

Claim 16 (Original): The printing inspection data generating method according to Claim 15, wherein:

the grouping condition is determined based on a geometrical range on the printing surface of said substrate.

Claim 17 (Original): The printing inspection data generating method according to Claim 15, wherein:

the grouping condition is determined based on an attribute of said electronic components.

Claim 18 (Original): The printing inspection data generating method according to Claim 15, wherein:

the grouping condition is determined so as to make one group for each of said electronic components.

Claim 19 (Original): The printing inspection data generating method according to Claim 15, wherein:

specific inspection data is given to the individual data groups.

Claim 20 (Original): The printing inspection data generating method according to any of Claims 15 through 19, wherein the element shape and position data is provided based on mask opening data detected from a mask plate to be used for the screen printing.